ABSTRACT

A fast photon detector with high energy and position resolution, which may be used in the infrared, ultraviolet, EUV, and X-ray ranges includes an absorber, a thermoelectric sensor, a heat sink, all disposed on a dielectric substrate. An absorber consisting of a anisotropic thin superconducting oxide film receives a photon and transforms the energy of the photon into a change in temperature within the absorber. A thermoelectric sensor is thermally coupled to the absorber. When the absorber receives the photon, the energy of the photon is very quickly transformed into a time dependent temperature difference across the sensor. A heat sink is thermally coupled to the sensor, to maintain the heat flow across the sensor. The absorber, sensor, and heat sink are disposed upon a dielectric substrate, such that the heat transfer from the sensor to the dielectric substrate is much slower than the signal duration.